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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>  | <p align="center">Page 1 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>  | <p align="center">Amendment Designator:</p>       |
|  | <p align="center">Effective Date: 13 May 2003</p> |
| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p> <p><b>11.1 Assignments</b></p> <p>11.1.1 Determine what type of examinations may be conducted and what conclusions can be reached from an examination of the following components. Discuss this with the Training Officer.</p> <ul style="list-style-type: none"> <li>a. Shot, deformed and undamaged</li> <li>b. Fired card or fiber wads</li> <li>c. Fired plastic wads</li> <li>d. Fired shotshell casings</li> <li>e. Unfired shotshells</li> <li>f. Shot buffer material</li> <li>g. Shot collar and shot cup</li> </ul> <p><b><i>(Use Training Assignment #55 and Practical Exercise #17 to complete this objective.)</i></b></p> <p>_____<br/>Training Officer</p> <p>_____<br/>Date</p> <p>11.1.2 Be familiar with the use of the SAF in regard to the determination of gauge and manufacturer of fired shotshell components. Know the limitations in regard to making such determinations. Demonstrate your proficiency in using the SAF to conduct this type of search to the Training Officer.</p> <p><b><i>(Use Training Assignment #54 to complete this objective.)</i></b></p> <p>_____<br/>Training Officer</p> <p>_____<br/>Date</p> <p>11.1.3 Using a shotgun, saw off a portion of the barrel. Test fire this shotgun using a Remington shotshell with a power piston wad. Recover the test shotshell wads and make microscopic comparisons of marks imparted to the test wads.</p> <p><b><i>(Use Training Assignment #58 to complete this objective.)</i></b></p> <p>_____<br/>Training Officer</p> <p>_____<br/>Date</p> <p>11.1.4 Test fire the following shotguns using at least two test shotshell casings from each shotgun and microscopically compare the marks imparted to these shotshell casings. Include in your comparisons the following types of marks: firing pin impression, breechface marks (<i>primer, battery cup, and head</i>), extractor marks, ejector marks, chamber marks, and any other mechanism marks. Photograph these marks and discuss the significance of identifying any of these types of marks.</p> <ul style="list-style-type: none"> <li>a. Marlin, Model 55, bolt action shotgun</li> <li>b. 12-gauge Remington, Model 1100, shotgun</li> <li>c. 12-gauge Mossberg, Model 500, shotgun</li> <li>d. J.C. Higgins, Model 1011, top-break single shot shotgun</li> <li>e. 12-gauge Beretta, Silver Snipe, shotgun</li> <li>f. Stevens, Model 311, side by side double barrel shotgun</li> </ul> |   |

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| <b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b>  | Page 2 of 10   |
| <b>Division of Forensic Science</b><br><b>FIREARM/TOOLMARK TRAINING MANUAL</b>   | Amendment Designator:<br>Effective Date: 13 May 2003 |
| <p align="center"><b>(Use Training Assignment #56 to complete this objective.)</b></p><br><div style="display: flex; justify-content: space-between;"> <div> Training Officer _____ </div> <div> Date _____ </div> </div> <p>11.1.5 Using a 12-gauge Remington, Model 1100, shotgun, obtain at least two test shotshell casings with each of the following types of ammunition. Also, recover a representative number of the fired pellets and fired wadding from each test firing. Compare markings on these test shotshell casings with each other. Examine the fired components that are recovered and compare them to unfired components of the same type. Discuss the significance of your findings.</p> <ol style="list-style-type: none"> <li>a. 12-gauge Remington, 2 3/4" Magnum, 00 Buck</li> <li>b. 12-gauge Remington, 2 3/4" Shur-Shot, #8 shot</li> <li>c. 12-gauge Federal, 2 3/4" Magnum, 00 Buck</li> <li>d. 12-gauge Federal, 2 3/4" Field load, #9 shot</li> <li>e. 12-gauge Activ, 2 3/4" Field load, #7 shot</li> <li>f. 12-gauge Activ, 2 3/4" Magnum, BB shot</li> <li>g. 12-gauge Winchester, 2 3/4" Xpert, #6 shot</li> <li>h. 12-gauge Winchester, 2 3/4" Super-X, #7 shot</li> </ol> <p align="center"><b>(Use Training Assignment #57 to complete this exercise.)</b></p><br><div style="display: flex; justify-content: space-between;"> <div> Training Officer _____ </div> <div> Date _____ </div> </div> <p>11.1.6 Discuss in detail the procedures used in reloading shotshells and familiarize yourself with the shotshell reloading equipment in the Firearm Section. Know how to recognize reloaded shotshells from an examination of the shotshell casing and/or its components. Reload shotshells using the shotshell reloading equipment in the section and examine the reloaded shotshells for reloading-type marks.</p> <p align="center"><b>(Use Training Assignment #59 to complete this objective.)</b></p><br><div style="display: flex; justify-content: space-between;"> <div> Training Officer _____ </div> <div> Date _____ </div> </div> <p>11.1.7 Research the current U.S. shot sizes and weights and obtain a chart reflecting the data. Be familiar with the variations worldwide in shot size and composition. Learn the significance of the "Rule of 17" as it applies to shot size.</p> <p align="center"><b>(Use Training Assignment #54 to complete this objective.)</b></p><br><div style="display: flex; justify-content: space-between;"> <div> Training Officer _____ </div> <div> Date _____ </div> </div> <p><b>11.2 Reference Materials Shotshell Case &amp; Component Examinations</b></p> <p>The following reference materials serve several purposes:</p> <ul style="list-style-type: none"> <li>• To provide a wider range of additional resources in a given topic</li> <li>• To provide reference materials for future use</li> <li>• To gain additional in depth knowledge in a particular subject area</li> </ul> |  |

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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>   | <p align="center">Page 3 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>   | <p align="center">Amendment Designator:</p>       |
|   | <p align="center">Effective Date: 13 May 2003</p> |
| <p>Any additional references encountered in this category should be made as notes at the end of this listing.</p> <p>11.2.1 General</p> <p>Burrard, G., <u>The Identification of Firearms and Forensic Ballistics</u>, 1<sup>st</sup> edition, Charles Scribner Sons, NY, 1934, revised edition, A.S. Barnes &amp; Co., NY, 1964.</p> <p>Datig, F.A., <u>Cartridges for Collectors</u>, Volumes I-III, Borden Publishing Co., 1956.</p> <p>Davis, J.E., <u>An Introduction to Tool Marks, Firearms and the Striagraph</u>, Charles C. Thomas, Springfield, IL, 1958.</p> <p>Gunther, J.D., and Gunther, C.O., <u>The Identification of Firearms</u>, John Wiley and Sons, Inc., New York, 1935.</p> <p>Hatcher, J.S., <u>Hatcher's Notebook</u>, Military Service Publishing Company, Harrisburg, PA, 1947.</p> <p>Hatcher, J.S., Jury, F.J., and Weller, J., <u>Firearms Investigation, Identification and Evidence</u>, 2<sup>nd</sup> edition, Stackpole Books, Harrisburg, PA, 1957.</p> <p>Heard, B.E., <u>Handbook of Firearms and Ballistics: Examining and Interpreting Forensic Evidence</u>, John Wiley &amp; Sons, New York, 1997.</p> <p>Horn, W.R., <u>Headstamps and Cartridge Identification Data</u>, Horn Co., 1962.</p> <p>James, C.R., "Fluted and Annular-Grooved Chamber Markings," paper delivered at the AFTE annual training seminar, Tampa, 1998.</p> <p>Kennington, R.H., <u>The Matrix: 9mm Parabellum □ An Empirical Study of Type Determination</u>, 1992.</p> <p>Krcma, V., "Fluted and Annular Grooved Barrel Chambers in Firearms," <u>Journal of Forensic Sciences</u>, Vol. 41, No. 3, May 1966, pp. 407-417.</p> <p>Mathews, J.H., <u>Firearms Identification</u>, Volumes I-III, Charles C. Thomas, Springfield, IL, 1962.</p> <p>McClellan, D.B., <u>Small Arms Ammunition Identification Guide</u>, Normount Technical Publications, 1971.</p> <p>Remage, <u>Lyman Shotshell Hand Book</u>, Third Edition.</p> <p><u>NRA Firearms Fact Book</u>, 3<sup>rd</sup> edition, National Rifle Association, Fairfax, VA, 1989.</p> <p>White, H.P., and Munhall, B.D., <u>Cartridge Headstamp Guide</u>, H.P. White Laboratory, 1963.</p> <p><u>Pistol and Revolver Cartridges</u>, H.P. White Laboratory, 1963.</p> <p>AFTE Journal</p> <p>11.2.2 Case Notes</p> <p>"California Department of Justice Firearms Toolmark Identification Training Syllabus: Professionalism," 1991; 23(1):559-578.</p> |   |

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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>  | <p align="center">Page 4 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>  | <p align="center">Amendment Designator:</p>       |
|  | <p align="center">Effective Date: 13 May 2003</p> |
| <p>11.2.3 Examination Protocols and Procedures</p> <p>“California Department of Justice Firearms Toolmark Identification Training Syllabus: Professionalism,” 1991; 23(2):703-715.</p> <p>11.2.4 Worksheets</p> <p>“California Department of Justice Firearms Toolmark Identification Training Syllabus: Professionalism,” 1991; 23(2):714.</p> <p>Jordan, T.D., “Oklahoma State Bureau of Investigation Firearms Laboratory: A Pictorial Display,” 1979; 11(4):47.</p> <p>“Laboratory Work Sheets,” Newsletter #2, Aug. 1969, p. 15.</p> <p>Untitled insert, Newsletter #3, Oct. 1969, pp. 19-20.</p> <p>Untitled insert, Newsletter #4, Dec. 1969, p. 25.</p> <p>11.2.5 Reporting of Conclusions</p> <p>“California Department of Justice Firearms Toolmark Identification Training Syllabus: Professionalism,” 1991; 23(2):719-726.</p> <p>Jordan, T.D., “Oklahoma State Bureau of Investigation Firearms Laboratory: A Pictorial Display,” 1979; 11(4):50.</p> <p>11.2.6 Plastic Shotshells</p> <p>Gallant, J.J., “Will Plastic Shotshells Hinder Firearms Identification?,” 1987; 19(1):17.</p> <p>Mason, J.J., “Unusual Identification of All-Plastic Shotshell Cases,” 1989; 21(4):635.</p> <p>11.2.7 General</p> <p>Bouley, B., “Determination of Firing Sequence by Cartridge Case Markings,” 1995; 27(3):237-241.</p> <p>Byrd, S.C., “Misleading Cartridge Case Markings,” 1989; 21(3):522-523.</p> <p>Davis, J.E., “Test Toolmarks from Weapon Parts May Facilitate Comparisons,” 1972; 4(3A):28.</p> <p>Hart, R.P., “Information on Weapons Frequently Encountered,” 1981; 13(4):51.</p> <p>Heard, B.J., “Case of Interest,” 1978; 10(2):21.</p> <p>Hurst, F.M., “Unusual Brand of Pistol,” 1973; 5(6):29.</p> <p>Kennington, R.H., and Galan, J.I., “Ejector Type Marks on Unfired Cartridges,” 1987; 19(4):452.</p> <p>Lapierre, J.A.G., “Additional Identifying Features Dealing with Revolvers,” 1978; 10(3):36.</p> <p>McGuire, D.L., “Potentially Incorrect Weapon Identification,” 1972; 4(3):30.</p> |   |

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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>  | <p align="center">Page 5 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>  | <p align="center">Amendment Designator:</p>       |
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| <p>McKay, S.A., "Class Characteristics of Shotguns from Shell Markings," 1971; 3(3):34.</p> <p>Nennstiel, R., "Computer Supported Method of Firearm Type Determination," 1986; 18(4):4.</p> <p>Rathman, G.A., "Unusual Cartridge Case Identification," 1976; 8(4):29.</p> <p>Stengel, R.F., "Which Cartridge Was Fired First?," 1987; 19(3):325-326.</p> <p>Walsh, K.A., and Buckleton, J.S., "Firing Sequence Involving Two 303 British Cartridges," 1991; 23(3):816-819.</p> <p>Welch, N.E., "Matching a Bullet to a Cartridge Case," 1981; 13(4):79.</p> <p>11.2.8 Headstamps</p> <p>Al Khalifa, A.K., "Headstamps With Arabic Markings," 1983; 15(2):64.</p> <p>Anderson, E.J., "Headstamps of 5.56mm and 7.62mm Cartridges, Reportedly Manufactured in Singapore," 1974; 6(1):21.</p> <p>Barabash, T., "New Cartridge," 1978; 10(3):46.</p> <p>Bates, J.S., "Another Ammunition Oddity," 1973; 5(4):22.</p> <p>Berg, S.O., "Could You Have Identified It?," 1970; 2(10):32.</p> <p>"Interesting Headstamp," 1970; 2(7):22.</p> <p>"Interesting Headstamp," 1971; 3(4):14.</p> <p>Bridgemon, R.R., "Aguila Cartridges," 1985; 17(2):116.</p> <p>Clanet, C., "French Small Firearm Cartridge Headstamps," 1972; 4(2):26.</p> <p>Canning, D.R., "Headstamps for Stud Guns," 1976; 8(1):53.</p> <p>Cassidy, F.H., "What Caused the Unusual Headstamp Mark?," 1989; 21(4):655.</p> <p>Dougherty, P.M., "Eldorado Cartridge Corporation Headstamps," 1990; 22(4):443.</p> <p>Edwards, R.L., "Circumferential Fractures," 1991; 23(3):806-807.</p> <p>"New Type of Ammunition by MFS (Matravideki Femmuvek)," 1993; 25(4):254-258.</p> <p>Ernest, R.N., and Fite, K., "Remington Cartridge Made By Winchester," 1989; 21(3):520.</p> <p>Garland, P.V., "Color Code Identification of Small Arms Cartridges," 1974; 6(2):27.</p> <p>"Headstamp Designator +P," 1974; 6(2):10.</p> <p>Gieszl, R., "New Ammunition," 1982; 14(1):40.</p> <p>Green, K., "Remington Announces a New Headstamp for Rimfire," 1983; 15(3):18.</p> |   |

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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>   | <p align="center">Page 6 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>   | <p align="center">Amendment Designator:</p>       |
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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>   | <p align="center">Page 7 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>   | <p align="center">Amendment Designator:</p>       |
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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>  | <p align="center">Page 8 of 10</p>                |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>  | <p align="center">Amendment Designator:</p>       |
|  | <p align="center">Effective Date: 13 May 2003</p> |
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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>   | <p align="center">Page 9 of 10</p>                |
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| <p align="center"><b>11 SHOTSHELL/SHOTSHELL CASE AND COMPONENT EXAMINATIONS</b></p>  | <p align="center">Page 10 of 10</p>               |
| <p align="center"><b>Division of Forensic Science</b></p> <p align="center"><b>FIREARM/TOOLMARK TRAINING MANUAL</b></p>  | <p align="center">Amendment Designator:</p>       |
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